

**INDIANA STATE DEPARTMENT OF HEALTH**  
**Report on Fireworks-Related Injuries**  
**(Period of July 20, 2003 – July 27, 2004)**

Legislation passed in 2003 by the Indiana General Assembly (HEA 1131) requires physicians, hospitals, and outpatient surgery centers to report all injuries resulting from fireworks or pyrotechnics to the Indiana State Department of Health. This report presents data compiled since the initial report was published in August 2003 (the initial report is available at [www.statehealth.in/fireworks/index/htm](http://www.statehealth.in/fireworks/index/htm)). Note that Table 3 in the current report provides a comparison of 2003 and 2004 data.

**HIGHLIGHTS**

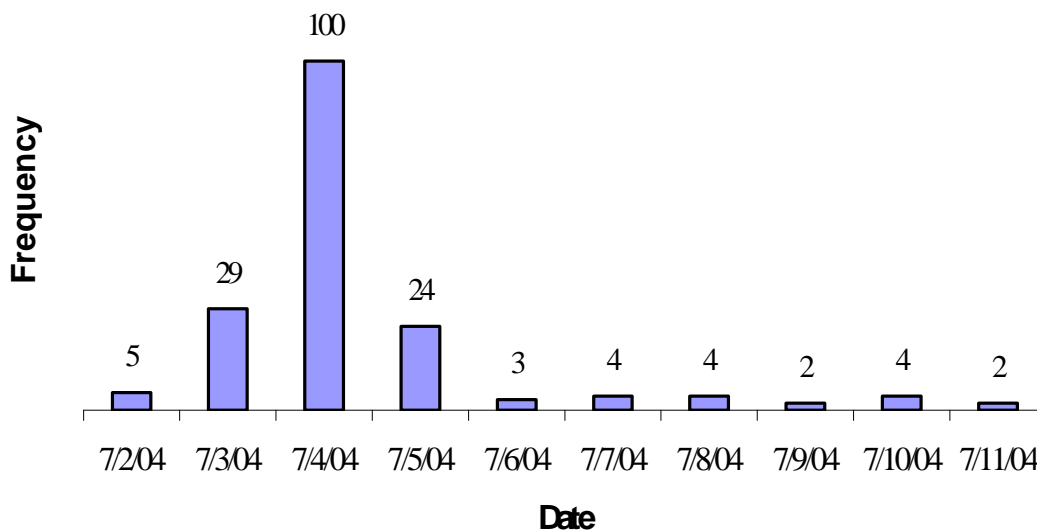
- **As of July 27, 2004, there were 215 unduplicated cases reported to ISDH.**
- **Fifty-one percent of all fireworks-related injuries reported involved children and adolescents, who represent a fourth of the population in Indiana.**
- **Sixty-seven percent of cases reported burn injuries, with burns of the hands being the most common type of injury.**
- **One out of every four injuries reported involved the eyes, with 82 percent of those with eye injuries not using any method of eye protection.**
- **Seventeen percent of injured persons required either hospital admission or specialized care for burns or eye injuries.**
- **Sparklers, rockets and firecrackers were associated with 63 percent of all injuries reported.**
- **Fireworks use on private property accounted for more than three-fourths of the injuries reported.**
- **There is a 17 percent reduction in the number of injuries reported during the holiday 4-day peak period of July 3<sup>rd</sup> – 6<sup>th</sup>: 156 reports for 2004 compared to 189 reports for 2003.**

**Fireworks-Related Injuries**

- ◆ **Seventy-six percent (164) of the reported injuries involved males and 24 percent (51) involved females.**
- ◆ **Eighty-seven percent (188) of the injuries were among the white race; Black/African Americans accounted for 7 percent (16) of all injuries.**

- ◆ The median age of those injured was 18 years (average=22 years; range=6 weeks to 72 years).
- ◆ Forty-seven percent (100) of the injuries occurred on July 4th and 82 percent (177) of all injuries occurred between July 2<sup>nd</sup>-11<sup>th</sup> as per Figure 1. Ninety-two percent (198) of all injuries occurred between June 20<sup>th</sup> 2004 and July 27<sup>th</sup> 2004. Only 17 cases were reported between July 20<sup>th</sup> 2003 and June 19<sup>th</sup> 2004.

**Figure 1: Fireworks-Related Injuries by Date, July 2-11, 2004.**



Sparklers, rockets, and firecrackers accounted for 63 percent of the injuries (Table 1). Many other types of fireworks causing injury were reported, including a quarter stick of dynamite, smoke bombs, spinners, small poppers, roman candles and fountains. Although 21 percent (45) of the reports noted that the injury resulted from mishandling fireworks, 37 percent (79) reported that the injury resulted from fireworks malfunction or an errant path of a rocket.

Sixty-seven percent (145) of the cases experienced injury from burns. Of these, sixty-eight percent (99) reported the most severe burn as second-degree. Five cases reported third-degree burns. Other types of injuries included contusions/lacerations/abrasions (55 cases), penetrating foreign body/missiles (13 cases), puncture wounds (9 cases) and sprains/fractures (4 cases). Fifty-eight (158) percent of all injuries involved the hands or eyes, although injuries to many parts of the body were reported (Table 2).

Among the 87 percent (186) who reported the location of the activity that resulted in injuries, 63 percent (117) occurred at the injured person's private home, yard, or

property. A friend/neighbor/relatives home or property was involved for 26 percent (48); public or school property was noted for 9 percent (16).

Although most reports did not provide information on alcohol consumption, 13 percent (29) stated that alcohol was imbibed related to the injury and 19 of these noted alcohol use within three hours of the injury. Fourteen cases reported alcohol use by other people at the scene.

Sixteen percent (35) of all people injured were bystanders. Among those injured who were less than 18 years of age, fifty-two percent (n=105) of the injuries happened while in the presence of an adult.

**Table 1: Frequency of Type of Fireworks Involved in Injury, All Injuries.**

<b>Type of Fireworks / Pyrotechnics</b>	<b>Frequency</b>	<b>Percent</b>
Rockets (i.e., bottle rockets)	53	24.7%
Sparkler	48	22.3%
Firecrackers	34	15.8%
Aerial Devices	16	7.4%
Twister / “Jumping Jacks”	5	2.3%
Homemade, altered devices	2	0.9%
Pyrotechnics*	1	0.5%
Unspecified / Unknown / Other	56	26.0%
<b>Total</b>	<b>215</b>	<b>100%</b>

\*Reported to the State Fire Marshal’s office for further investigation.

**Table 2. Frequency of Body Part Injured, All Injuries.**

<b>Body Part Involved**</b>	<b>Frequency**</b>	<b>Percent of Injured Persons**</b>	<b>Percent of All Injuries**</b>
Hand	90	41.9%	33.0%
Eye	68	31.6%	24.9%
Face/Ears/Head	45	20.9%	16.5%
Leg	31	14.4%	11.4%
Arm	19	8.8%	7.0%
Trunk	18	8.4%	6.6%
Other	2	0.9%	0.7%
<b>Total</b>	<b>273</b>	<b>127%</b>	<b>100%</b>

\*\*Not mutually exclusive, some cases received injuries to multiple body parts.

## **SUMMARY 2004 DATA**

For the 215 cases of fireworks-related injury that comprise this report, eighty-two percent (177) occurred during the weekend prior to and after July 4<sup>th</sup>, including 47 (100) percent of injuries that took place on Independence Day. While those injured ranged in age from 6 weeks to 72 years, children and adolescents comprised more than one-half (51 percent) of the reported cases. According to the 2000 U.S. Census population estimates for Indiana, persons under 18 years of age represent a fourth of the population. Adults were present half of the time for injuries reported in children and adolescents. Males were involved in 76 percent of all cases reported, which is a common finding for many traumatic injuries. The racial distribution of those injured was similar to that of the population of Indiana.

As expected, burns were the most frequent type of injury, involving 67 percent (145) of all reported cases and 53 percent of all injuries. While the hands were the part of the body most commonly injured (one-third of all injuries), injuries to the eye (one-fourth of all injuries) were also quite frequent, with the great majority (82 percent) of those with eye injuries reporting no method of eye protection in use. Bystanders were injured in 16 percent (35) of reported cases. Hospital admission was needed for 4.7 percent of those injured, with an additional 12.1 percent requiring specialized care for either burn injuries or eye injuries. There were no deaths reported related to fireworks injuries during the time period of this report.

When the location of the activity using fireworks was identified, 77 percent (165) of cases reported occurred at private home, yard, or property (self-owned or friend, neighbor or relative). The type of fireworks involved in injuries varied somewhat by age, with sparklers causing the most injuries in young children, rockets and firecrackers involved in adolescents, and a fairly equal distribution of these three types of fireworks also affecting injured adults.

Mishandling, malfunction, or errant path of fireworks was the most frequent mechanism reported for fireworks-associated injury, accounting for 58 percent of all those injured. Although whether alcohol was used was not stated for 84 percent of the reported cases, alcohol use occurred at the scene of activities affecting injured persons of all age groups. Alcohol use was reported by 27 percent of all adults injured.

**Table 3: Comparison of 2003 and 2004 Data**

<b>Category</b>	<b>2003</b> <sup>(n=261)</sup>	<b>2004</b> <sup>(n=215)</sup>
<b>Demographics</b>		
Median Age/Range	18 (0-74 yrs)	18 (0-72 yrs)
Children/Adolescents	53%	51%
Males	73%	76%
Females	27%	24%
White	84%	87%
Black or African American	10%	7%
<b>Injury Type/Body Part Injured</b>		
Burns	76%	67%
Hand Injuries	34%	33%
Eye Injuries	17%	25%
<b>Injury Circumstances</b>		
Injured on Private Property	83%	77%
Cases with No Eye Protection	82%	82%
Children Injured with Adults Present	60%	50%
Received Specialized Care for Burn or Eye Injuries	8%	12%
Hospitalized	3%	5%
<b>Fireworks Circumstances</b>		
Injuries from Sparklers, Rocket, and Firecrackers	63%	63%
Injuries from Mishandling Firework	27%	36%
Errant Path or Malfunctioning Firework	21%	37%

Source: ISDH, Injury Prevention Program

This 2004 report to the citizens of Indiana will be the final report provided by the Indiana State Department of Health as the required reporting of fireworks-related injuries expires at the end of 2004, according to House Enrolled Act 1131 passed in 2003. A consolidated report of 2003 and 2004 data will be provided to the Legislative Council by December 31, 2004.

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This report was prepared by Sandra Beck and Charlene Graves, M.D., of the Indiana State Department of Health Injury Prevention Program, who can be contacted at [Sbeck@isdh.state.in.us](mailto:Sbeck@isdh.state.in.us) or [Cgraves@isdh.state.in.us](mailto:Cgraves@isdh.state.in.us). (August 1, 2004)

## **APPENDIX**

### **(Reporting Period: July 20, 2003 to July 27, 2004)**

This section of the report describes the characteristics of the reported injuries for three specific age groups – children, adolescents, and adults. Please refer to the figures below which demonstrates the age-related distribution of the types of injuries, body parts involved, and the types of fireworks involved.

#### **CHILDREN: LESS THAN ONE THROUGH ELEVEN YEARS OF AGE**

There were 61 (42 male and 19 female) injuries reported in children. The types of fireworks mainly resulting in injury included sparklers (25 cases), rockets (13 cases) and firecrackers (7 cases). Three-fourths of the cases (46) sustained burns in this age group.

The most frequently reported injured body part was the legs and eyes (17 cases each). Injuries to other body parts included the hands (16 cases), face/ears/head (11 cases), arm (5 cases), and trunk (5 cases). None of those with eye injuries were using eye protection. The majority of these injuries (66 percent or 40) happened in the presence of an adult. Three reports noted alcohol use at the scene at the time of the injury. Fifteen of the injured children were bystanders. The majority (84 percent or 51) of those injured were evaluated in hospital emergency departments or provider offices and then released to home. No cases in this age group were admitted to the hospital.

#### **ADOLESCENTS: TWELVE THROUGH EIGHTEEN YEARS OF AGE**

Among adolescents, there were 48 fireworks-related injuries, involving 40 males and 8 females. The most frequent type of fireworks involved among this age group were rockets (15 injuries), followed by firecrackers (10 injuries), sparklers (8 injuries), and aerial devices (3 injuries). Burns (56%) and the category of contusion/laceration/abrasion (27%) were the most frequently types of injuries reported.

The hand was the most frequently reported body part injured (22 cases). Injuries to other parts of the body included the eye (19 cases), face/ears/head (7 cases), arm (4 cases), leg (3 cases) and trunk (2 cases). Among those with eye injuries, none were wearing eye protection, although one person was wearing contact lenses at the time of the injury. One person required surgery to the eye as a result of the injury sustained. Four cases required hospitalization and eight were transferred to or re-evaluated at more specialized healthcare sites (i.e., burn centers, eye centers).

Among those cases less than age 18 years, 15 injuries occurred while in the presence of an adult. Four of the injured were bystanders. Although the most frequently reported mechanism of injury involved mishandling of fireworks, 17 people reported injury resulting from malfunctioning or errant paths of the fireworks.

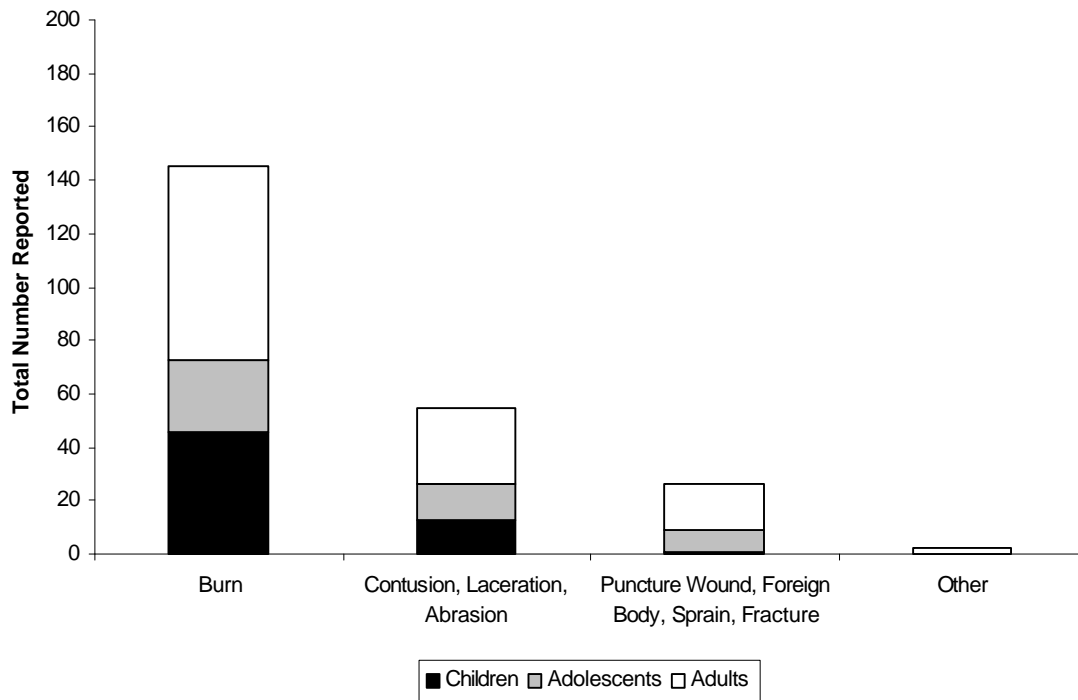
## ADULTS: NINETEEN YEARS OF AGE AND OLDER

There were 106 people (49 percent of all cases) age 19 years and older injured during this reporting period (82 males and 24 females). The types of fireworks primarily involved in the injuries were rockets (25 cases), sparklers (22 cases), and firecrackers (17 cases). Pyrotechnics was reported as the cause of one injury. Sixty-eight percent (72) of the adults experienced burn injuries.

Hand injuries were reported 52 times. Injuries also included the eye (32 cases), face/ears/head (27 cases each), trunk (11 cases), legs (11 cases) and arm (10 cases). For those with eye injuries, only three wore eyeglasses or safety glasses. Six cases were admitted to hospitals. Thirteen cases were transferred to or re-evaluated at more specialized healthcare sites (i.e., burn centers, eye centers).

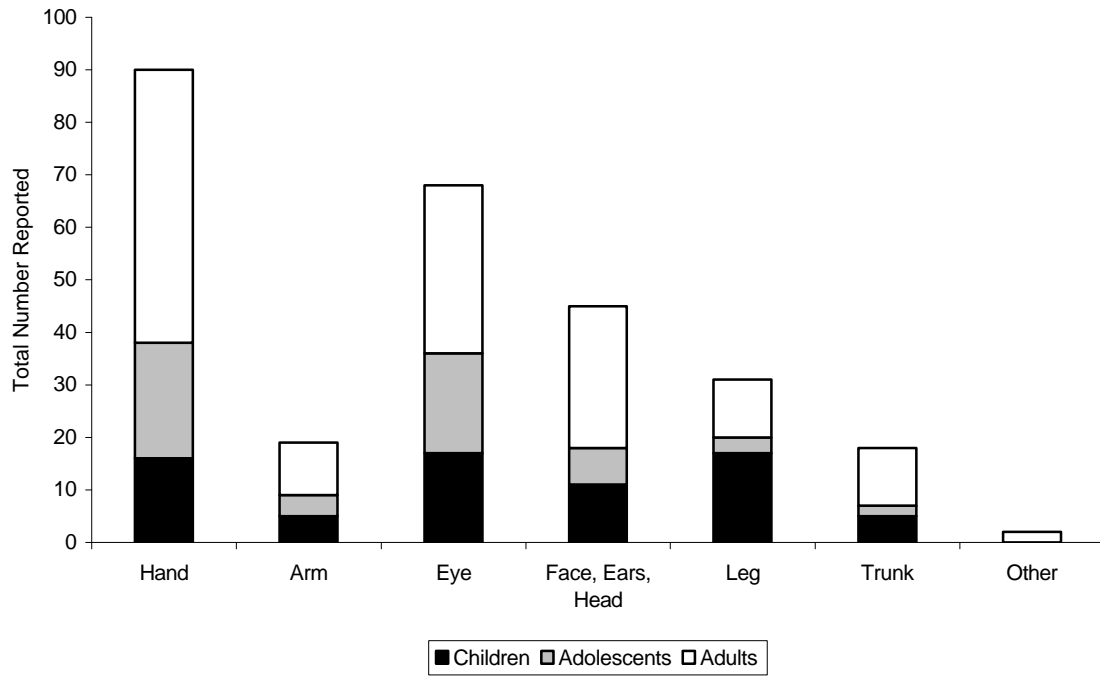
The use of alcohol was reported by 27 percent (29) of injured adults and 19 imbibed alcohol within three hours of the injury. Fifteen of the injured cases were bystanders. Fifty cases reported an injury resulting from malfunctioning fireworks or an errant path of rockets, while 17 note that mishandling of fireworks resulting in the injury.

**Figure 1: Type of Injury Involved in Fireworks, Indiana 2004**



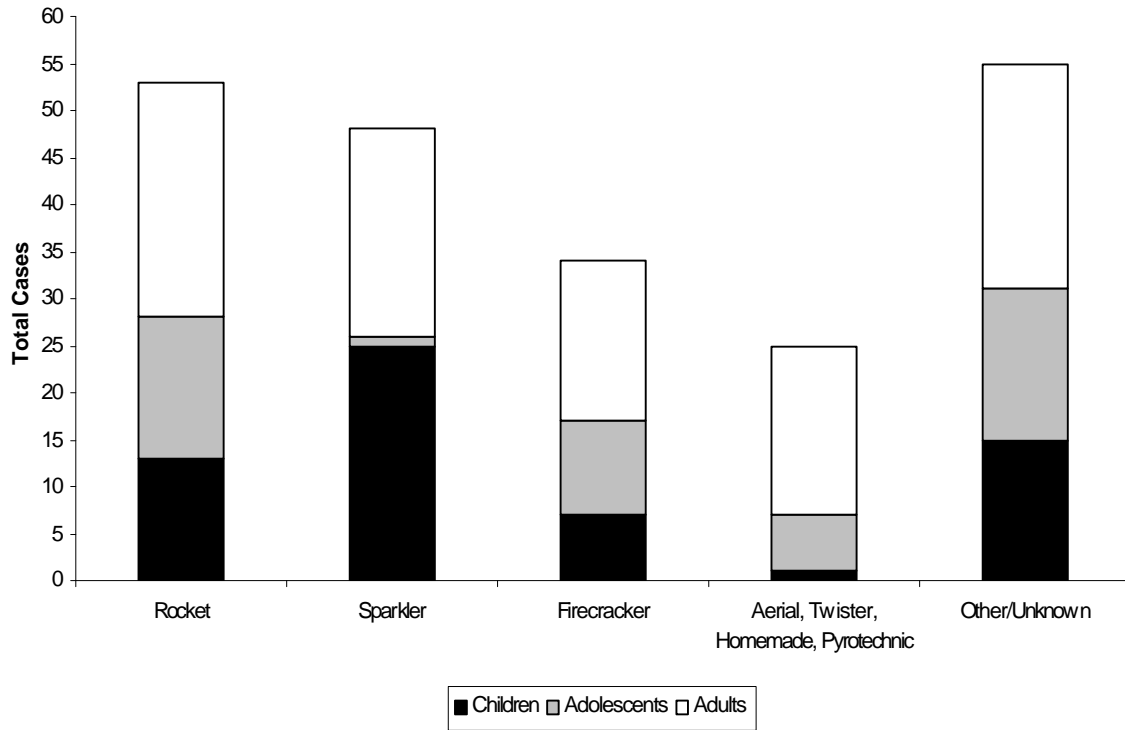
Source: ISDH, Injury Prevention Program

**Figure 2: Body Parts Involved in Fireworks-Related Injuries, Indiana 2004**



Source: ISDH, Injury Prevention Program

**Figure 3: Type of Firework Involved in Injury, Indiana 2004**



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Source: ISDH, Injury Prevention Program